Space Weather Forecast

Issued on Sunday, 14 April 2024 at 13:28 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance Minor or Moderate geomagnetic storms on 14 or 15 Apr from CME arrivals, and arrival of a fast solar wind. Chance of isolated Moderate flares.

Solar Activity: Moderate with one M-class flare early on 14 Apr from a new small sunspot region in the southeast. There are eleven sunspot regions on the disc, but the majority are small and simple. The largest region in the northwest has seen some slow growth, but remains a simple bipolar configuration. A number of small sunspots are visible on both the southeast and northeast limbs, and further regions have the potential to rotate onto the disc.

A coronal mass ejection (CME) from the southeast, appears to be slow and relatively narrow but may glance the Earth. No other Earth-directed CMEs were observed.

Solar Wind / Geomagnetic Activity: Solar winds persisted at background levels.. The interplanetary magnetic field (IMF) was weak with the north-south component also varying weakly. Resultant geomagnetic activity was Quiet (Kp 0-2).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background with no Solar Radiation storms occurring.

Four-Day Space Weather Forecast Summary
Solar Activity: Low to Moderate solar activity is expected, with a chance of isolated Moderate flares.

Solar Wind / Geomagnetic Activity: Three CMEs may affect the Earth through the forecast period. A first which erupted on 11 Apr may glance the Earth on 14 Apr. The second which left centre disc on 12 Apr is forecast for an arrival early on 15 Apr, with a third from the vicinity of AR3634 on 13 Apr perhaps glancing the Earth on 17 Apr. Solar wind speeds are forecast to increase to around 450-500km/s on 14 Apr due to a fast solar wind, then declining on 16 Apr. Geomagnetic activity is expected to increase from Quiet or Unsettled to Active with a chance of G1/Minor to G2/Moderate Storm intervals on 14 or 15 Apr from the combined fast solar wind or CME arrivals. A decline in activity is then expected as the effects of these events wane.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to remain at background with no Solar Radiation storms occurring, with only a slight chance of increasing if any larger flares occur from the larger of the sunspot regions in the northwest disc.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	40	50	5	1
Strong	G3	No	5	10	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	50	50	50	50
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	2	5	5	5
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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